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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/567,794	02/09/2006	Ernest De Ruiter	8312-7/05.1816.6.do	2686
30/565 7590 03/03/2009 WOODARD, EMHARDT, MORIARTY, MCNETT & HENRY LLP 111 MONUMENT CIRCLE, SUITE 3700 INDIANAPOLIS, IN 46204-5137				
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MCALL, JOSEPH				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/567,794

**Applicant(s)**

DE RUITER, ERNEST

**Examiner**

Joseph V. Micali

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 January 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 18-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18-37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SE/US)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. The amendments filed on January 14<sup>th</sup>, 2009 have been entered. Claims 18-37 remain pending in the application.

#### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
4. **Claims 18-19, 21, 25, and 27-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Pub. No. 2003/0092560 by Von Blucher, in view of US Patent No. 4,273,619 by Angelo II.**

With respect to claims 18-19, 21, and 27-30, Von Blucher teaches a process for producing granular activated carbon by carbonization, comprising of the plurality of temperature zones and the limitations of steps a, b, and c of the currently reviewed application (**claim 1**). The apparatus transporting or conveying means can be through a continuous rotary tube (**paragraph 0039 and 0048**). Von Blucher also teaches a total residence time of the starting material in the apparatus in the range from 0.1 to 5 hours

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(**claim 9**). Finally, Von Blucher teaches a first temperature zone operated at temperatures in the range of from 50 to 200°C, a second temperature zone operated at temperatures in the range of from 100 to 500°C, and a third temperature zone operated at temperatures in the range of from 400 to 1,200°C (**claim 9 and 11 as well as MPEP 2144.05 [R-5]**

**Obviousness of Ranges).**

Von Blucher does not, however, teach that the individual temperature zones are separately and independently controlled, as well as the setting of a temperature profile in the individual zones. Von Blucher also does not teach a continuous carbonization apparatus.

Angelo II teaches a continuous carbonization apparatus for the process of continuously carbonizing and activating carbonaceous materials in a series of longitudinally spaced zones with independent regulation of gas and temperature (**column 6, lines 52-62 and claim 1**). Process control is performed by setting the temperature profile in the individual temperature zones (**column 6, lines 52-62 and claim 1**).

The motivation for the combination of these two inventions would have been obvious to a person of ordinary skill in the art at the time of invention, as the idea for continuous production of activated carbon has been around since the 1980s (with Angelo II). The addition of divided temperature zones has been shown not only in this field, but several others, including food technology and metallurgy. The suggestion or motivation to do so would be for better control of the carbonization apparatus, maintaining distinctions in sectioning rather than subjecting the whole apparatus to changes in temperature.

With respect to claims 31-35, Von Blucher teaches each of these. Von Blucher teaches a temperature zone, in which the groups, when thermally decomposed, lead to

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free radicals and thus to cross-linkages are sulfonic groups and are introduced into the starting material by sulfonation (**claim 1**). Von Blucher teaches a starting material comprising polymers in the form of polymer granules based on styrene and divinylbenzene and containing chemical groups which, when thermally decomposed, lead to free radicals and thus to cross-linkages (**claim 1**). Furthermore, Von Blucher teaches that the starting material used comprises ion-exchanger resins having sulfonic acid groups (**claim 4**), or the chemical groups are sulfonic acid groups being already present in the starting material, wherein the weight ratio of polymers to sulfonic acid groups is in the range from 5:1 to 1:1 (**claim 2-4**). Finally, Von Blucher teaches a subsequent activation of the carbonized material (**claim 1**).

Von Blucher does not, however, teach that the individual temperature zones are separately and independently controlled.

As mentioned above, Angelo II teaches separately and independently controlled individual temperature zones. The suggestion or motivation can also be found above.

**5. Claims 22-24 and 36-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Pub. No. 2003/0092560 by Von Blucher in view of US Patent No. 4,273,619 by Angelo II, as applied to claims 18-19, 21, 25, and 27-35 above, and further in view of US Patent No. 5,212,144 by Schwartz, Jr.**

With respect to claims 22-24 and 36-37, Von Blucher teaches a process for producing granular activated carbon by carbonization comprising of the plurality of temperature zones listed in claim 18, steps a, b, and c of the currently reviewed application (**claim 1**). Angelo II teaches a continuous carbonization apparatus for the process of continuously carbonizing and activating carbonaceous materials in a series of

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longitudinally spaced zones with independent regulation of gas and temperature (**column 6, lines 52-62 and claim 1**).

Angelo II, while teaching the regulated divisions in independent temperature zones, does not include the means for separating the different zones by a lock mechanism for exhaust means.

Von Blucher in view of Angelo II, however, fails to teach an apparatus and method for producing activated carbon through a furnace in a plurality of treatment stages.

Schwartz, Jr. teaches an apparatus and method for producing activated carbon through a furnace in a plurality of treatment stages, with a preferred embodiment having air locks or their equivalent set between stages that sweep gases can be introduced and exhausted per stage (**claim 7 and column 6, line 10-36**).

Von Blucher, Angelo II, and Schwartz, Jr. are all drawn to similar methods of continuously producing activated carbon. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the lock feature of Schwartz, Jr. with the method of Angelo II and Von Blucher under the suggestion or motivation of better control over separating gases and temperature zones from each other as well as maintaining purity within each section.

**6. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Pub. No. 2003/0092560 by Von Blucher in view of US Patent No. 4,273,619 by Angelo II, as applied to claims 18-19, 21, 25, and 27-35 above, and further in view of US Patent No. 5,437,237 by Digre.**

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With respect to claim 20, Von Blucher teaches a process for producing granular activated carbon by carbonization comprising of the plurality of temperature zones listed in claim 18, steps a, b, and c of the currently reviewed application (**claim 1**).

Angelo II teaches a continuous carbonization apparatus for the process of continuously carbonizing and activating carbonaceous materials in a series of longitudinally spaced zones with independent regulation of gas and temperature (**column 6, lines 52-62 and claim 1**).

While both Von Blucher and Angelo II teach an apparatus with transporting or conveying means (a continuous rotary tube or tumbling bed), neither teach an apparatus using a belt-oven.

Digre is drawn to a continuous pyrolysis (or carbonization) system using a belt-oven (**claim 7**).

Von Blucher, Angelo II, and Digre are all drawn to producing carbon through an apparatus employing transporting means. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to substitute the belt-oven of Digre for the continuous rotary tube of Von Blucher. The suggestion or motivation to do so would have been a substitution of transporting means as a rotary tube is tougher and harsher on the material than a belt-oven; thus, the advantage of selecting a belt-oven would be for smoother, most consistent transporting through the apparatus.

7. **Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Pub. No. 2003/0092560 by Von Blucher in view of US Patent No. 4,273,619 by Angelo II, as applied to claims 18-19, 21, 25, and 27-35 above, and in further view of US Patent No. 6,316,378 by Giebelhausen et al.**

With respect to claim 26, Von Blucher teaches a process for producing granular activated carbon by carbonization comprising of the plurality of temperature zones listed in claim 18, steps a, b, and c of the currently reviewed application (**claim 1**).

Angelo II teaches a continuous carbonization apparatus for the process of continuously carbonizing and activating carbonaceous materials in a series of longitudinally spaced zones with independent regulation of gas and temperature (**column 6, lines 52-62 and claim 1**).

Von Blucher in view of Angelo II, however, does not specifically claim a speed setting for the starting material to move through the apparatus, just that it moves continuously (Von Blucher does the same).

However, to ensure the rejection, Giebelhausen teaches a method of producing shaped activated carbon through a kiln apparatus, and specifically wherein process control is performed by setting the speed at which the starting material moves through the temperature zones of the apparatus (**claim 2**).

Von Blucher, Angelo II, and Giebelhausen are all drawn to similar methods of continuously producing activated carbon. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the limitation of Giebelhausen with the method of Von Blucher and Angelo II, with the suggestion or motivation of specifying a speed required by Von Blucher but not disclosed.

#### ***Response to Arguments***

8. Applicant's arguments filed January 14<sup>th</sup>, 2009 have been fully considered but they are not persuasive.

Examiner acknowledges applicant's filing of a terminal disclaimer filed with their response and amendments.



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With regards to point 1 and applicant's statement that a prima facie case of obviousness was not established, examiner maintains the initial rejection.

Applicant cites three reasoning for the lack of a prima facie case of obviousness; a) teaching away, b) combination would change basic principle of operation, and c) combination would render method unsatisfactory for its intended purpose.

In addressing point 1a, applicant cites that the von Blucher reference method performs its two-step process in two different apparatuses, thus teaching away from the continuous single apparatus. Examiner agrees that von Blucher does not teach a continuous single apparatus; however, examiner maintains obviousness to make continuous. This is due to the fact that it is known and preferred in the art, given the secondary references, to make such a process continuous, and that MPEP 2144.04 [R-6] covers the prima facie obviousness case of making continuous. Examiner maintains, without hindsight, that a person having ordinary skill in the art at the time the invention was made would have attempted to make the process of von Blucher continuous, regardless of the applicant's reasoning to keep as separate units.

In addressing point 1b, applicant argues that combination would change the basic principle of operation, requiring reconstruction and redesign of process equipment. Firstly, the current application is drawn to a process, not an apparatus; therefore, reconstruction and redesign of the apparatus is inconsequential to the process. Secondly, applicant argues that the basic principle of operation would change, due to the inability to employ "optimum" materials of construction for process equipment for optimal use. This is not sufficient to counter that a change in basic principle of operation occurs, because the selection of such materials does not change the basic principle of operation as

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outlined in the claims. The main issue of continuous versus discontinuous has been addressed above.

In addressing point 1c, applicant argues the inability to employ “optimum” materials of construction for process equipment for optimal use, leading the invention to not satisfactorily fulfill its intended purpose. This is not sufficient to counter that the newly modified invention would be unsatisfactory for its intended purpose, because the selection of such materials does not change the intended purpose as outlined in the claims. Once again, the main issue of continuous versus discontinuous has been addressed above.

With regards to point 2 and applicant's statement that a prima facie case of obviousness was not established, examiner maintains the initial rejection.

In addressing point 2, applicant argues that because the Schwartz reference uses only sweep gas and a different atmosphere, the reference is not pertinent. However, the reference is pertinent as it is drawn to the production of activated carbon through a furnace in a plurality of stages, and most importantly, teaches air locks or their equivalent to separate stages. That is all that's necessary for the rejections, and one having ordinary skill in the art at the time the invention was made would have looked to such a reference which produces the same material and see the benefits of adding air locks or equivalent to any similar system. The main issues of continuous versus discontinuous and optimal materials for construction have been addressed above.

In addressing point 3, applicant argues that because Digre is not drawn to a process for producing activated carbon, that the pyrolysis is done in a different environment, and that the current invention is a different inventive concept from Digre, the combination does not stand. However, the use of Digre is to show knowledge in the

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art of using a belt-oven with regards to pyrolysis and carbonization. Applicant does not address this, so it is assumed that a belt-oven is well-established in the art of pyrolysis and carbonization; thus, the selection of a belt-oven would have been obvious to one having ordinary skill in the art at the time the invention was made. The main issues of continuous versus discontinuous, optimal materials for construction, and being unsatisfactory for its intended purpose have been addressed above.

In addressing point 4, applicant argues that because Giebelhausen is silent with respect to sulfonation of the carbon, that the raw materials are treated in a dryer and only afterwards transferred to a second kiln, the combination does not stand. However, the use of Giebelhausen is to definitively show that a process control of setting the speed at which material moves through the apparatus is well-established in the art of activated carbon production; thus, the addition of a speed setting process control would have been obvious to one having ordinary skill in the art at the time the invention was made. The main issues of continuous versus discontinuous, optimal materials for construction, and being unsatisfactory for its intended purpose have been addressed above.

### ***Conclusion***

9. Claims 18-37 are rejected.
10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph V. Micali whose telephone number is (571) 270-5906. The examiner can normally be reached on Monday through Friday, 7:30am to 5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Joseph V Micali/  
Examiner, Art Unit 4181

/J.A. LORENZO/  
Supervisory Patent Examiner, Art Unit  
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